# Binge Drinking in Michigan

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## Introduction

Alcohol abuse has been associated with serious health problems, such as cirrhosis of the liver, high blood pressure, stroke, and some types of cancer, and has been shown to increase the risk of motor vehicle accidents, injuries, violence, and suicide. 1-3 In Michigan, the percent of fatal motor vehicle crashes that involved any alcohol was 38.0% in 2004.4

The mission of the Michigan Office of Drug Control and Policy (ODCP) is to "reduce the abuse of alcohol, drugs and other substances and related criminal activity and violence."5 ODCP and other stakeholders in the State Epidemiology Workgroup (SEW) are in the process of developing and implementing a strategic prevention framework that:

- 1. prevents the onset and reduces the progression of substance
- reduces substance abuse-related problems in communities; and
- 3. builds prevention capacity and infrastructure at the state and community levels.5

#### Objectives

- To examine demographic associations and behaviors related to binge drinking among Michigan adults
- To provide feedback to the SEW concerning specific characteristics of alcohol consumption in Michigan.

#### Methods

- The Michigan Behavioral Risk Factor Surveillance System (BRFSS) is a statewide telephone survey of the non-institutionalized, civilian population who lived in a household with a residential phone line.
- The optional binge drinking module was added the Michigan Behavioral Risk Factor Survey (BRFS) in 2003 and 2004.
- Data from the 2003 and 2004 binge drinking module were combined using SPSS (v. 10.0.5).
- SUDAAN 9.0.1 was used in a combined-year analysis of the 2003 and 2004 binge drinking module for all population proportional estimates and statistical
- From the binge drinking module, the range of alcoholic beverages consumed was 0-44 drinks (n=1 109). Any adult who reported less than five alcoholic beverages were excluded from the analyses (n=86).
- Estimates were weighted to adjust for the probabilities of selection and a poststratification weighting factor that adjusted for the distribution of Michigan adults by age, sex, and race/ethnicity at the state level.

## **Definitions**

- · Binge Drinking: The consumption of five or more alcoholic beverages (one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor) per occasion at least once in the previous month
- One Alcoholic Beverage: The consumption of a 12-ounce beer, a 4-ounce glass of wine (including wine coolers, hard lemonade, hard cider, and flavored malt beverages), or a drink with one shot of liquor (including cocktails).

#### Prevalence

Figure 1: Binge Drinking



Figure 1: Michigan has consistently had a higher prevalence of binge drinking when compared to the United States median. In 2003, the estimated prevalence of binge drinking in Michigan was 19.1% (17.6 20.7), and in 2004, 16.2% (14.9-17.6).

## Results

Table 1: Prevalence of Binge Drinking and Mean Number of Alcoholi Beverages Consumed by Demographic Characteristics 2003-2004 Michigan BRFS

| Demographic<br>Characteristics  | Binge Drinking <sup>a</sup> |                     | Beverages Consume<br>During Last Binge<br>Drinking Occasion |                   |
|---------------------------------|-----------------------------|---------------------|---|-------------------|
|                                 | %                           | 95%<br>Confidence   | Mean  | 95%<br>Confidence |
|                                 |                             | Interval            |   | Interval          |
| Total                           | 17.4*                       | (16.4 - 18.5)       | 7.9   | (7.6 - 8.3)       |
| Age                             |                             |                     |   |                   |
| 18 - 34                         | 27.9                        | (25.5 - 30.5)       | 8.8   | (8.2 - 9.4)       |
| 35 - 54                         | 17.8*                       | (16.3 - 19.3)       | 7.2   | (6.9 - 7.5)       |
| 55 +                            | 6.4                         | (5.6 - 7.4)         | 6.6   | (6.1 - 7.1)       |
| Gender                          |                             |                     |   |                   |
| Male                            | 26.0*                       | (24.3 - 27.8)       | 8.3   | (7.9 - 8.7)       |
| Female                          | 9.5                         | (8.6 - 10.6)        | 6.9   | (6.6 - 7.3)       |
| Race                            |                             |                     |   |                   |
| White                           | 18.7*                       | (17.6 - 19.9)       | 7.8   | (7.5 - 8.1)       |
| Black                           | 11.1                        | (8.6 - 14.1)        | 7.8 <sup>b</sup>  | (5.5 - 10.1)      |
| Education                       |                             |                     |   |                   |
| High school graduate<br>or less | 18.5                        | (16.9 - 20.2)       | 8.4   | (7.8 - 9.0)       |
| Some college                    | 18.9                        | (17.0 - 20.9)       | 7.9   | (7.4 - 8.5)       |
| College graduate                | 14.5*                       | (13.0 - 16.2)       | 7.0   | (6.5 - 7.4)       |
| Household Income                |                             |                     |   |                   |
| < \$35,000                      | 17.3                        | (15.5 - 19.2)       | 8.6   | (7.9 - 9.4)       |
| ≥ \$35,000                      | 19.1*                       | (17.7 - 20.5)       | 7.5   | (7.1 - 7.8)       |
| Caution needs to be used wit    | th interpreting             | no these averaged e | stimates he   | cause there we    |

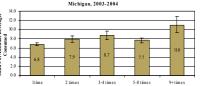
inclusion recuss to the used with interpreting these averaged estimates because there were a few significant differences between the 2003 and 2004 prevalence estimates among Michigar and some demographic groups (noted with an astericks). Results from the binge drinking dule did not vary between years.

<sup>b</sup> Mean may be unstable due to a sample size of less than 50 respondents (n=49)

Table 1: The averaged 2003-2004 prevalence rate for binge drinking decreased with age from 27.9% of those aged 18-34 years to 6.4% of those aged 55 years and older. Men were more likely than women (26.0% vs. 9.5%) and Whites were more likely than Blacks (18.7% vs. 9.5%) to have engaged in binge drinking. College graduates were less likely to have binge

Among binge drinkers, the mean number of alcoholic beverages consumed during their last binge drinking occasion was 7.9 drinks, consisting of 5.4 beers, 0.6 glasses of wine, and 1.9 drinks with liquor. Younger adults, men. and those with a lower household income and education level had a higher mean number of alcoholic beverages.

Figure 2: Mean Number of Alcoholic Beverages Consumed on Last Binge Drinking Occasion by Number of Binge Drinking Occasions in the Previous Month



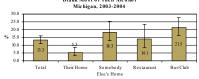
Number of Binge Drinking Occasions in the Previous Month

Figure 2: Those adults who had more binge drinking occasions drank, on average, more alcoholic beverages during their last occasion. An estimated 85.7% (75.9-91.9) of those who binge drank nine or more times in the past month were also defined as heavy drinkers (consuming on average more than two alcoholic beverages per day for men or more than one alcoholic beverage per day for women).

Figure 3: Where Adults Drank Most of Their Alcohol the Last Time They Binge Drank



Figure 4: Drove Motor Vehicle During or Within a Couple of Hours After Last Binge Drinking Occasion by Where Adults Drank Most of Their Alcohol



Where Adults Drank Most of Their Alcohol During Last Bing

Figure 3: The most frequently reported place for their last binge drinking occasion was at their home (37.1%), followed by at a bar or club (23.7%) and at somebody else's home (21.9%)

Figure 4: An estimated 13.3% drove a motor vehicle after their last binge drinking occasion. Those who binge drank either at somebody else's home (18.3%), at a restaurant (14.1%), or at a bar or club (21.5%) were more likely to drive a motor vehicle than those who drank at home (5.3%).

Figure 5: How Adults Got Most of Their Alcohol During Their Last Binge Drinking Occasion



Figure 5: Over half (50.8%) of all Michigan adults who binge drank in the previous month bought most of their alcohol during their last binge drinking occasion from a store. Over one quarter (28.0%) bought it at a bar. A higher number of alcoholic beverages were consumed when somebody else bought the drinks (8.9 drinks) when compared to adults who bought the alcohol from a store (7.7 drinks) or from a bar (7.6 drinks) for themselves.

### **Facts**

- Current smokers had more binge drinking occasions in the previous month [1.5 occasions (1.3-1.8)] than former smokers [0.6 (0.4-0.7)] and never smokers [0.4 (0.3-0.4)]. Current smokers drank, on average, more during their last binge drinking occasion than former smokers or never smokers [8.5 drinks (8.0-9.0), 7.6 (6.9-8.3), 7.3 (6.8-7.9), respectively].
- Although those who had frequent mental distress (having 14 or more days of mental health that was not good) binge drank more often in the past month than those who did not [1,1 (0.7-1.4) vs. 0.7 (0.6-0.7)], they did not drink, on average, more alcoholic beverages [8.8 (7.5-10.1) vs. 7.8 (7.4-8.1)].
- In 2004, binge drinkers were twice as likely to have access to a loaded, unlocked gun in or around their home than those who did not binge drink [5.4% (3.7-8.0) vs. 2.7% (2.2-3.3)].
- On September 30, 2003, Michigan reduced the Blood Alcohol Content (BAC) Limit for adult operators of noncommercial vehicles from 0.10 to 0.08. Data from January to September 2003 were compared to data from January to September 2004 to account for season effects. Among all binge drinkers, the prevalence of driving after their last binge drinking occasion decreased slightly, but not significantly [14.5% (10.9-19.1) vs. 10.7% (7.7-14.5)] between these two time periods.

# **Underage Binge Drinking**

Table 2: Binge Drinking Characteristics by Age Group 2003-2004 Michigan BRFS (18-20 Year Olds) Binge Drinking 95% 95% Characteristics Estimate Confidence Confidence Interval Interval Binge Drinking 16.9 (15.9 - 18.0) Percent (20.8 - 33.1) Mean Occasions in Pas 1.0 (0.7 - 1.4)0.7 (0.6 - 0.8)Total Alcohol Consumption 11.8 (5.2 - 24.7) 26.0 (15.2 - 40.9) 25.5 (15.1 - 39.8) 36.7 (22 - 14.7) Percent 29.7 (26.5 - 33.0) 36.3 (32.9 - 39.7) 21.9 (19.1 - 25.1) 12.2 (9.8 - 15.0) 6-7 drinks 8-11 drinks 12+ drinks low Alcohol Was Acquired (% (70.0 - 91.3) 13.1 (10.9 - 15.7) Self Bought it at a Store 12.3 (5.5 - 25.2) 54.4 (50.7 - 57.9) 30.2 (27.0 - 33.7) (1.5 - 3.5) Self Bought it at a Bar 4.5 (1.4 - 13.9) Other Place of Last Binge Drinking Occasion (%) 37.8 18.7 7.8 25.3 4.4 (17.2 - 43.7) Home (42.0 - 70.5) (0.3 - 11.5) (2.5 - 18.1) (0.2 - 8.7) Somebody Else's Home 56.8 1.8 7.0 (16.0 - 21.8) (6.2 - 9.9) Restaurant Bar/Club (22.2 - 28.6) (3.2 - 6.1) (4.6 - 7.7) Public Place Other (1.0 - 18.5)Drinking Occasion (%) 9.0 (3.3 - 22.3) 13.8 (11.5 - 16.4)

\* Estimates may be unstable due to a sample size of less than 50 respi binge drinking section (n=227).

b Nobody aged 18-20 years who binge drank in the past month reported "other" as a way of getting most of their alcohol during their last binge drinking occasion.

Table 2: Underage adults (aged 18-20 years) were more likely to have binge drank in the previous thirty days compared to those aged 21 years and older (26.5% vs. 16.9%). During their last binge drinking occasion, underage adults consumed a higher number of alcoholic beverages on average (11.0 vs. 7.6). An estimated 12.3% of underage adults bought most of their alcohol. at a store with an additional 4.5% having bought it at a bar.

## Discussion

Since 1984, binge drinking in the BRFSS has been defined as consuming five or more alcoholic beverages on at least one occasion in the past 30 days. Based on previous studies concerning alcohol effects by gender, the World Health Organization<sup>6</sup> and the National Institute on Alcohol Abuse and Alcoholism<sup>7</sup> have adopted a new gender-specific definition of binge drinking in 2000 and 2004, respectively. In 2005, the BRFSS followed suit and is collecting these data in 2006. Binge drinking will now be defined as consuming five or more alcoholic drinks for men or four or more alcoholic drinks for women on at least one occasion in the past 30 days. Consuming this number of drinks in men and women within a couple of hours has been associated with having an approximate BAC level of 0.08.

The BAC level of 0.08 is the threshold point where a person is presumed to be impaired to operate a motor vehicle in all states, the District of Columbia, and Puerto Rico.8 In 2004, among all motor vehicle drivers involved in fatal crashes. 19% had a BAC level of 0.08 or higher in Michigan.9

Results from this module will provide target areas for prevention activities, such as implementation of new public health and community-based policies, and the development of educational materials and resources.

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